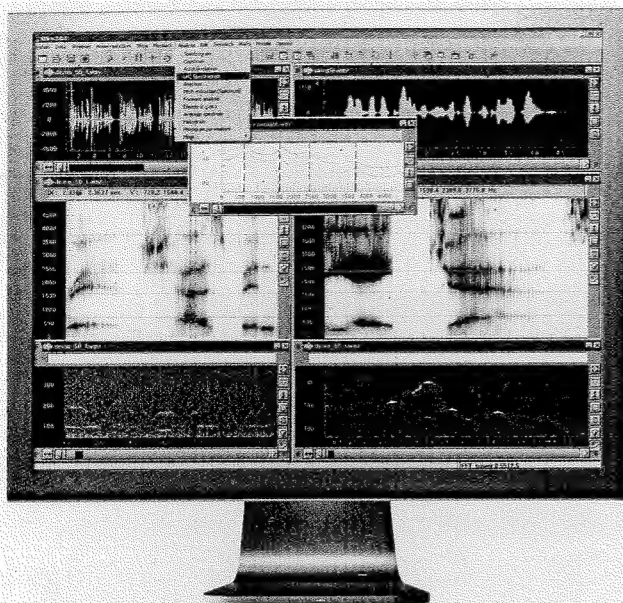


IKAR Lab

Most popular audio forensic lab in the world. 350 installations in more than 60 countries worldwide

-
- Speaker identification
 - Speech enhancement and audio restoration
 - Authenticity analysis of audio recordings
 - Analysis of acoustic environment
 - Testing and identification of audio equipment
 - Transcription of low quality records
-



SIS

Audio visualization and editing



SIS is the core software of IKAR Lab audio forensic package. It encompasses rich functionality for audio signal visualization, analysis and editing.

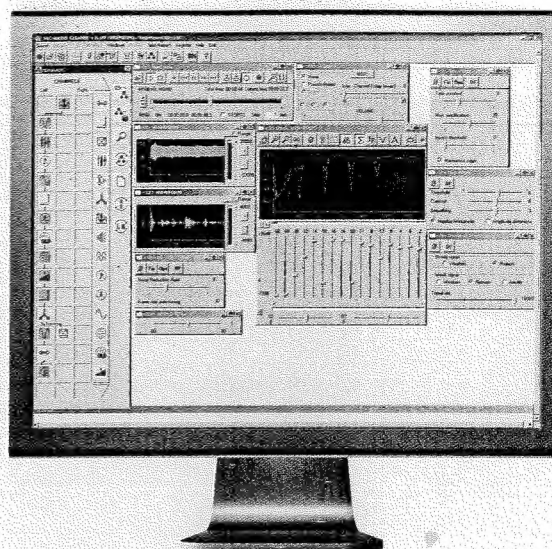
SIS operates with all audio formats and can capture audio from .avi video format. It is also converts analog-to-digital signals with any sample rate.

Editing

- Signal normalization
- Speaker separation
- Mixing
- Modulation
- Slowing/speeding up speech tempo without pitch distortion
- Re-sampling
- Signal synchronization
- Splitting stereo signals or merging of two mono signals into stereo
- Phase change
- Waveform reversing
- Service real-time marks decoding

Signal visualization and analysis

- Waveform
- FFT and LPC sonograms
- FFT power spectrum average
- Cepstrum
- Autocorrelation
- Pitch
- Formants
- Energy
- Histogram and histograms correlation
- Windows overlaying for different types of analysis
- Windows synchronization in time and spectral domains for speakers comparison
- Automatic comparison of pitch statistics for two speakers and text report
- Vertical and horizontal marks with text comments
- Brightness, contrast and normalization adjustments for visual speech representation



Sound Cleaner

Real-time noise cancellation

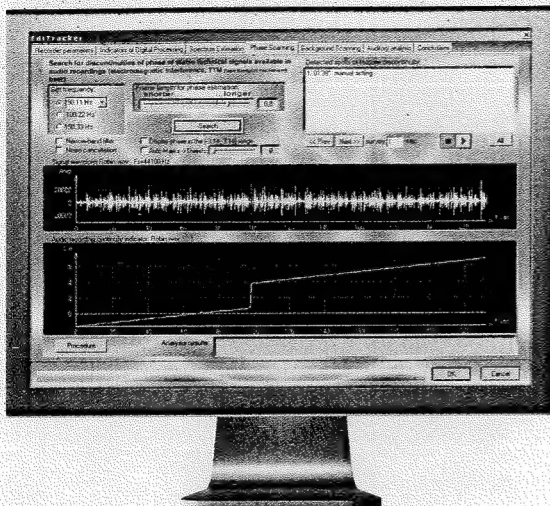


Sound Cleaner is a state-of-the-art real-time noise cancellation and speech enhancement software. Sound Cleaner uniquely combines all up-to-date noise filtering algorithms and speech enhancement tools in one product. Through the filtering workflow, each module can be easily activated and combined with others so that all the changes in the audio could be intelligibly heard on-the-fly.

- Typical processing schemes for common noise cancellation
- Filters adaptation to cancel noise while maintaining useful signal (speech)
- Easy to use, ability to adjust noise cancellation filters on-the-fly
- Operation with sound from different sources: analog outputs, microphone, file

Adaptive filters

- Parametric equalizer
- 2 adaptive filters of broadband noises
- Harmonic filter
- Adaptive inverse filter
- Adaptive filter of regular noises
- Impulse noise filter
- Dynamic filter (weak signal amplifying/weakening, strong signal weakening)
- Stereo signal filtering (time and frequency processing)
- Anti-reverberation filter
- Amplifier
- Tempo correction without pitch distortion
- Binaural listening support ("pseudo-stereo")



EdiTracker

Audio authentication

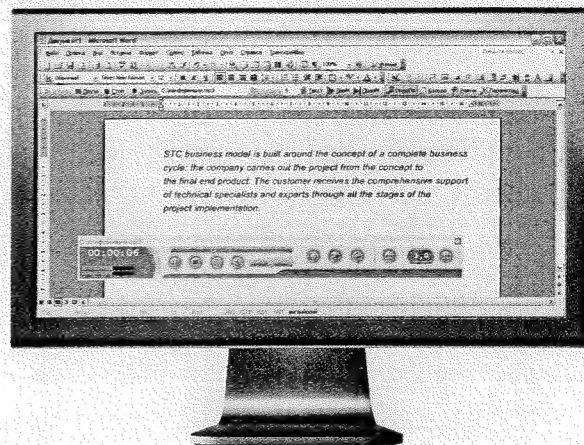


EdiTracker designed for audio authenticity analysis is a unique software module for SIS. Paired with SIS functionality it significantly increases IKAR Lab capabilities in terms of audio authentication.

EdiTracker provides six different methods of investigation, automatically searches for suspicious areas of phonogram fragments, visualize all the steps of research and generates text reports.

This entire comprehensive tool set considerably improves the speed and the reliability of expert operations.

- Calculation of a recorder's parameters
- Finding the traces of previous digital processing
- Finding the traces of tampering by the harmonics phase shift
- Background noise scanning
- Automatic logging of each type of analysis for final protocol
- Built-in instructions for each type of analysis



Caesar

Quick speech-to-text transcription



Caesar software combines multi-functional digital voice recorder and text editor. It ensures fast and easy audio playback and transcription in one software interface. The text is automatically linked to the audio for quick reference to the corresponding fragment in the track.

- Control by hotkeys
- Speech slowing without pitch distortion
- Linking audio fragments to text for convenient search
- Foot pedal for playback control (optional)

Equipping Audio Forensic Laboratory

Depending on the volume of collected audio materials, a forensic audio laboratory can be flexibly configured to meet the needs of any organization.

The typical mid-size laboratory can support all basic audio examinations challenges with two workstations.

The following considerations should be taken into account:

Audio forensic science stands at the junction of diverse disciplines including physics, audio engineering, linguistics, and law. Since it can be quite a challenge for one specialist to master equally all this information, normally at least two analysts are involved in a case investigation. They are one audio engineer and a language specialist. Their parallel and independent work can significantly increase reliability of the conclusion.

Forensic Audio Lab for Two Operators

Workstation 1

Duties

- Sound input from various audio sources
- Audio recording equipment testing
- Audio duplication
- Speech enhancement
- Text transcription
- Speaker ID
- Reporting

Equipment

- Calibrated I/O device STC-H246
- SIS
- Sound Cleaner
- Caesar
- Specialized audio playback systems that match the type of recordings expected to be received in a laboratory.
- High-quality wiring, connectors, and adapters to manage all required equipment connections
- Sealed headphones and well-padded loudspeakers

Workstation 2

Duties

- Sound input from various audio sources
- Speech enhancement
- Speaker ID
- Audio authenticity
- Reporting

Equipment

- Calibrated I/O device STC-H246
- SIS
- EdiTracker
- Trawl Lab
- Sound Cleaner
- Sealed headphones and well-padded loudspeakers

Additional equipment

- Digital photo camera
- Safe for evidences storage
- Printer
- Analog and digital audio recordable media
- Local area networking (LAN) equipment,
- Equipment for expert report hard copy production (local network laser printer)
- Professional digital voice recorder for voice samples recording

Training, Theoretical and Practical Support

Audio forensic training is a part and parcel of audio lab efficiency work. STC courses are designed to provide the student with detailed theoretical and hands on training on the suite of audio forensic products and methods used for different types of examinations.

Training: Forensic acoustics

Duration: 5 days

- The theory and practice of noise cancellation and low-quality speech decoding
- Sound Cleaner: real-life audio files processing
- Articulation and speech production
- Forensic voice identification: different approaches and methods applied
- Spectrographic ID analysis in SIS
- Real-life examples and practice
- Authentication: theory and practice
- Audio authenticity instrumental analysis using SIS and EdiTracker
- Real-life examples and practice
- Making a report

Contacts

Russia

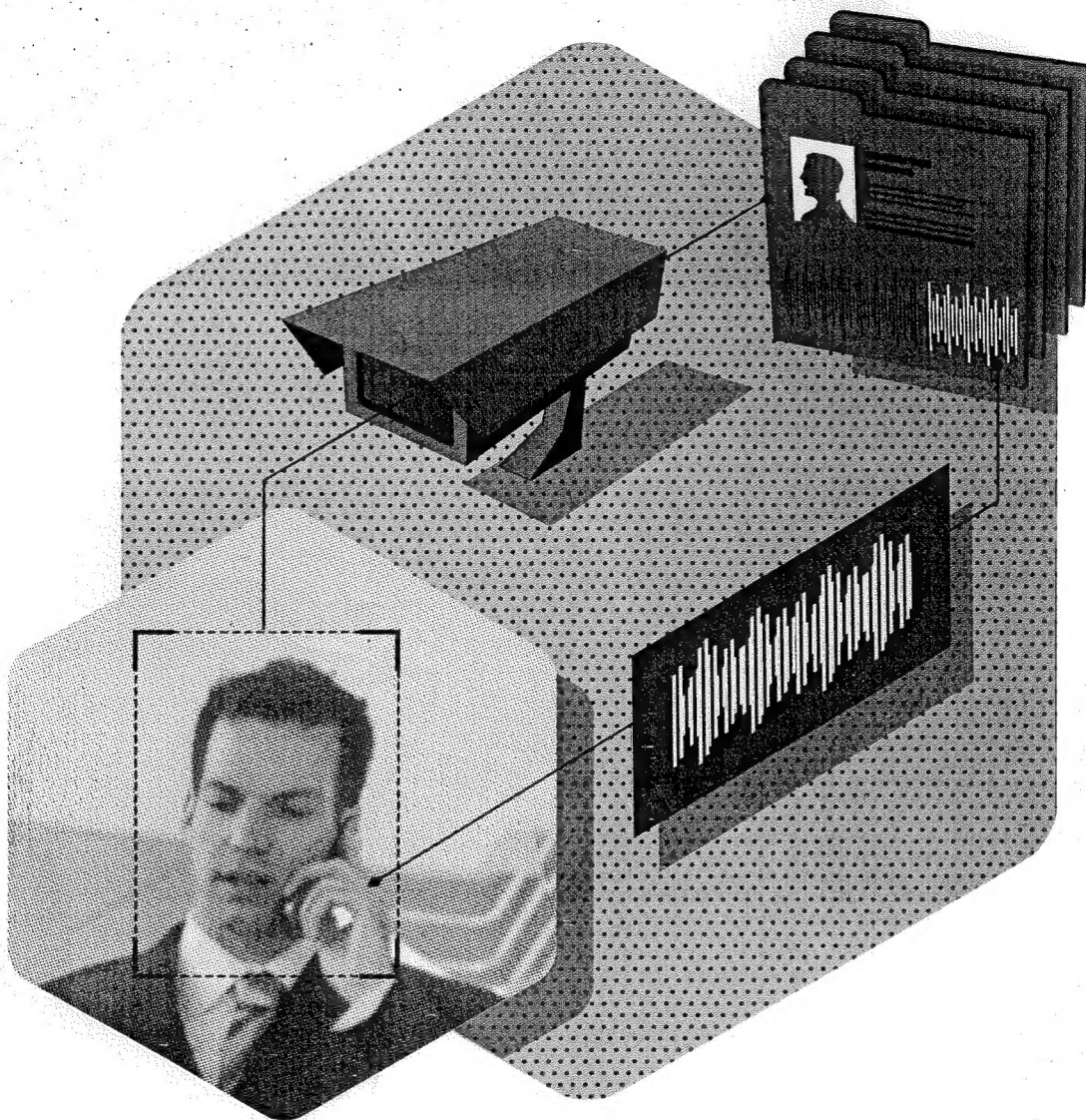
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STC Grid ID

The solution for identity authentication and verification based on the combination of two biometric technologies used covertly – voice identification and face recognition.

- Implementation, maintenance and automation of the local, regional and national databases
- Instant identification of the suspects and affiliates
- Forensic investigation for the subsequent presentation of the results to the court

Unimodal and bimodal biometric technologies

Current situation:

Most of the biometric systems are characterized by unimodality, i.e. only one behavioral or physical characteristic of the individual is used for identification.

Problem:

Insufficient level of the results reliability.

Purpose:

Increased reliability of the results by combining different methods of identification within a single system.

Decision:

Non-intrusive bimodal biometric system STC Grid ID which is based on two biometric technologies - voice identification and face recognition.

System advantages:

- There is no need to contact with the individual to enroll the samples
- More accurate results are received due to the combination of voice identification and face recognition
- Low costs of samples enrollment, system deployment and exploitation
- Both biometric technologies are enabled to work on the databases of large volume.

Low costs for the deployment and technical support of the system.

STC Grid ID system has a number of advantages, particularly, it is low cost of deployment, technical support, easy maintenance, scalability and integration with other biometric and non-biometric systems.

Integration with the other forensic systems

STC Grid ID can be easily integrated with the other biometric and non-biometric systems as well as with the expert forensic systems of Speech Technology Center due to the STC Grid ID client-server architecture and user-friendly software interface.

Work with the speech fragments of any quality

System is capable to deal with the speech patterns even of low-quality, obtained from different sources.

Customer training

The specialists of the Speech Technology Center provide comprehensive training so that the Customer's staff could use the system efficiently.

Technical support

24/7 two-level technical support is provided by the specialists both in the developer's office and at the local service centers.

Data security

Safety of the transmitted and stored data is provided by the use of the https protocol, the rights allocation based on the user groups and roles, registration of all the operators' actions in the database and protection of the operator workplace against the password theft.

Scalability

System has no technical limitations either by the template capacity, or by the number of users, that makes it a universal platform for storing, searching and other operations with the media data within the laboratory, the region and the entire state.

Remote access

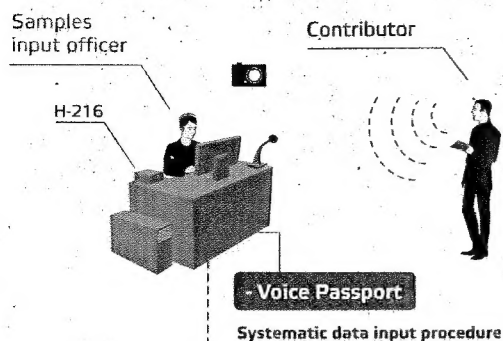
Web-based interface, support of the majority of the browsers and the secure data transmission protocols ensure the high level of mobility of the officers in the course of the investigation.

Platform independence

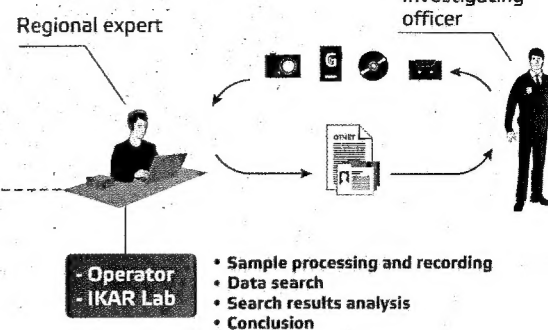
As the system is compatible with all the existing operating systems, it allows to adjust it to the customer's IT infrastructure.

Region

Enrollment

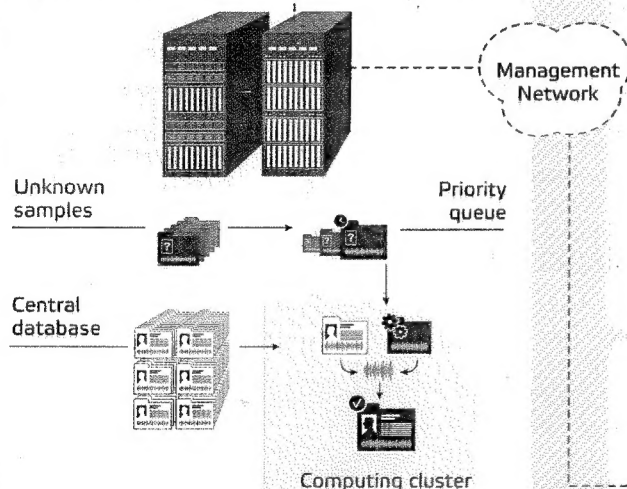


Investigation office



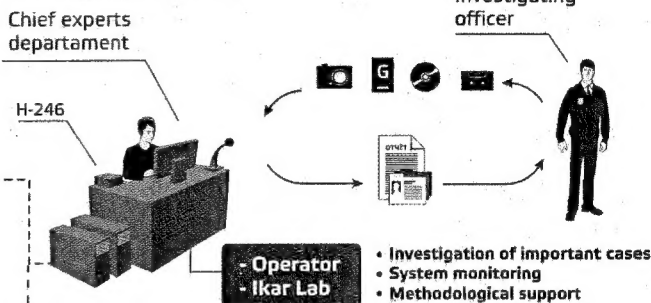
WAN or Internet

Data center



HQ

Central laboratory



User Administrator

- Administrator
- Creates accounts
- Manages the group structure
- Receives notifications in case of password theft suspicion

Database Structure Administrator

- Template Manager
- Creates speaker cards samples
- Creates shortcuts to access the database sections

Security Administration Center

Hardware Administration

- Monitoring tools
- Administrator
- Receives notifications of hardware failures

Comparison chart of biometric identification methods

Identification method	Pattern cost	Search speed	Accuracy*
Voice	↓	↑	~ ↑↑
Face	↓	↑	~ ↓
Fingerprint	~	↑	~
Iris	↑	~	↑
3D Face	↑	~	↑
DNA	↑	↓	↑

* Accuracy of a particular method changes significantly depending on the quality of the given pattern.

** ↑ — High, ~ — Medium, ↓ — Low

About Speech Technology Center

Universally acknowledged quality of algorithms

"Speech Technology Center" participated in recent evaluation tests of National Institute of Standards and Technologies (NIST) and its voice biometric technology showed one of the best results to date.

Global projects

In 2010 STC successfully deployed the world's first nationwide voice-based identification system for the government of Mexico. It is the biggest voice biometric project to date that has laid the foundation of the new market segment and pushed biometric market and technology itself forward quick and qualitative evolution.

A unique team

At the heart of STC unique team there are strong management and sales professionals , talented young scientists and software engineers, as well as the world-renowned experts in the field of the speech technology

Turnkey projects

STC business model is built around the concept of a complete business cycle: the company carries out the project from the concept to the final end product. The customer receives the comprehensive support of technical specialists and experts through all the stages of the project implementation.

Contacts

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